

ABSTRACT OF THE DISCLOSURE

Systems and methods for multi-dimensional metrology and inspection of a specimen such as a bumped wafer are provided. One method includes scanning the specimen with partial
5 oblique illumination to form an image of the structure, either through the normal collection angle or through an oblique collection angle. The method also includes integrating an intensity of the image and determining a height of the structure from the integrated intensity. The integrated intensity may be approximately proportional or inversely proportional to the height of the structure. In addition, the method may include scanning the specimen with bright field
10 illumination to form a bright field image of the specimen. The method may also include determining a lateral dimension of the structure from the bright field image. Furthermore, the method may include detecting defects on the specimen from the bright field image or the obliquely-illuminated image.

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